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C-H FUNCTIONALIZATION IN THE SYNTHESIS OF CARBORANE-BASED POLYAZAHATEROCYCLIC HYDROCARBONS

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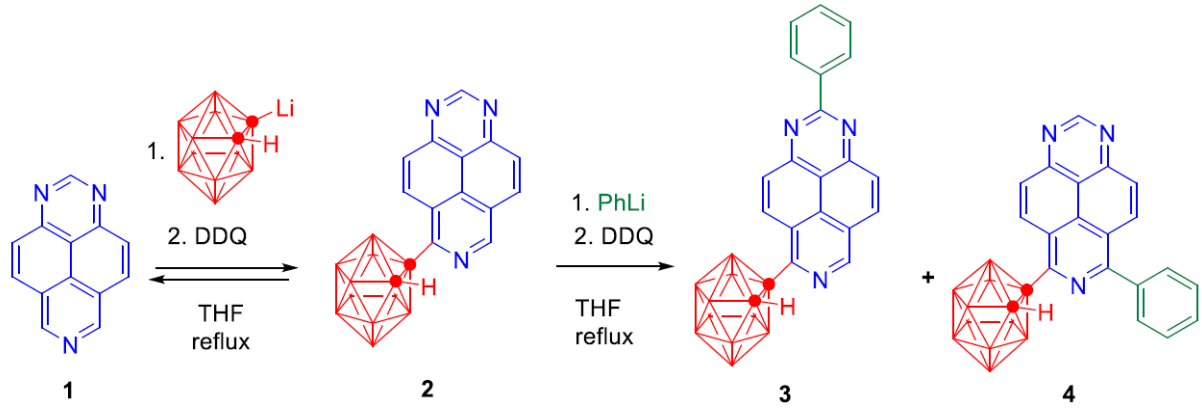
Among the versatile organic fluorophores, special attention is known to be paid to photoactive organoboron compounds, in particular heterocyclic derivatives of carborane. According to numerous studies, the *ortho*-carborane scaffold is considered to be an “element-block” for preparing solid state luminescent materials due to its excellent suppression of aggregation-caused quenching (ACQ). Carborane-based materials also currently find an application in catalysis, medicine, supramolecular chemistry and photovoltaics.

The methodology of direct C-H functionalization has been used as a basic synthetic tool in the design of new carborane-containing poly(hetero)cyclic hydrocarbons. Previously it has been shown that direct C-H functionalization of aromatic and non-aromatic N-oxides by carboranyllithium leads to various azinylcarboranes, dihydrophtalazinylcarboranes and imidazolylcarboranes. [1,2]



Scheme 1. Synthesis of carborane-containing derivatives of 1,3,7-triazapyrene

In this research it has been found that mono- and sequential double- C-H functionalization of 1,3,7-triazapyrene by carboranyl and phenyl moieties respectively provide novel both mono- and disubstituted boron-enriched polyazaheterocyclic hydrocarbons, which are of interest as promising functional elements in the design of advanced organic luminescence materials (scheme 1).

References

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